

A NEW SPECIES OF THE GENUS *TMARUS* AND DISCOVERY OF THE MALE *TMARUS TAIWANUS* (ARANEAE: THOMISIDAE) FROM CHINA¹

Guangxin Han² and Mingsheng Zhu²

ABSTRACT: A new species, *Tmarus songi* spec. nov. is described with both sexes from Guangxi Province, China. The condition of genital organ of the new species indicates its close relationship with *T. digitiformis* Yang, Zhu and Song, 2005. The male *Tmarus taiwanus* is described and illustrated for the first time.

KEY WORDS: Araneae, Thomisidae, *Tmarus*, Thomisidae, new species, China

The family Thomisidae Sundevall, 1833 is one of the largest spider families containing 171 genera and 2062 known species worldwide (Platnick, 2007). The genus *Tmarus* was erected by Simon, 1875. Currently, 214 species of *Tmarus* have been described worldwide (Platnick, 2007); 18 of them have been reported for China (Song and Zhu, 1997; Song et al., 1999; Yin et al., 2004; Yang et al., 2005; Platnick, 2007).

During an examination of the collections of Thomisidae deposited in the Museum of Hebei University, two new species, *Tmarus songi* and *T. taiwanus* were recognized. They are described and illustrated below. The male of *T. taiwanus* is described for the first time.

METHODS

All specimens were preserved in 75% ethanol and examined, drawn and measured under a Tech XTL-II stereomicroscope equipped with an Abbe drawing device. The epigyne of one female paratype was removed and placed in 10 percent hot solution of potassium hydroxide for 5-10 minutes.

All measurements are given in millimeters. The leg measurements are given in the following sequence: Total (femur, patella + tibia, metatarsus, tarsus). Type specimens are deposited in the Museum of Hebei University (MHBUS), Baoding, China. Abbreviations used, as follows: Somatic morphology: AER = anterior eye row; ALE = anterior lateral eye; AME = anterior median eye; MOA = median ocular area; PER = posterior eye row; PLE = posterior lateral eye; PME = posterior median eye. Male palp: E = embolus; T = tegulum; C = cymbium; RTA = retrolateral tibial apophysis; VTA = ventral tibial apophysis; ITA = intermediate tibial apophysis; BTA = basal tegular apophysis. Female genitalia: FD = fertilization duct; CD = copulatory duct; S = spermatheca.

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² College of Life Sciences, Hebei University, Baoding, Hebei 071002 P. R. China. E-mails: guangxin-han@163.com; mingshengzhu@263.net (corresponding author), respectively.

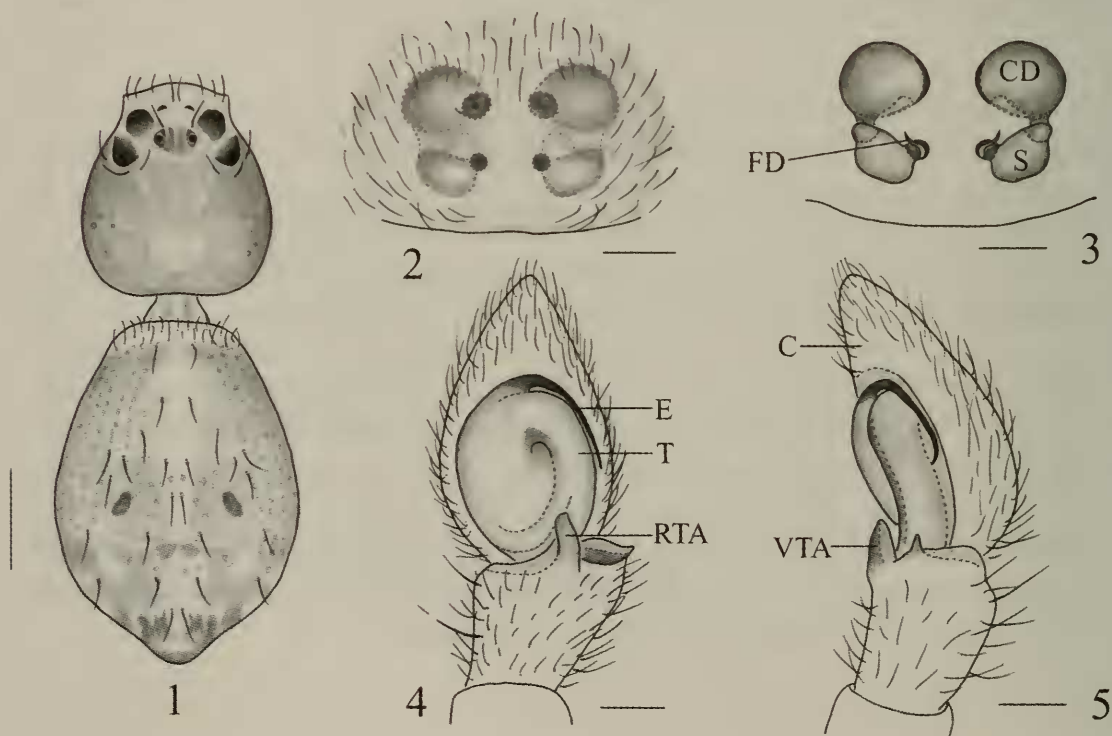
SYSTEMATIC ARANEOLGY

Tmarus songi, new species

Figs. 1-5

Male (base on Ar-01-0032): Total length 3.51. Carapace 1.39 long, 1.36 wide; abdomen 2.01 long, 0.99 wide. Carapace brown, length almost equal to width, and covered with small setae. Cephalic region light brown, dark brown on two sides, and the middle region light brown. Eye region with fine setae, both eye rows recurved, and diameters of eyes: AME 0.08, ALE 0.15, PME 0.10, PLE 0.15. Distances between eyes: AME-AME 0.10, AME-ALE 0.10, PME-PME 0.18, PME-PLE 0.25, ALE-PLE 0.20. MOA 0.30 long, anterior width 0.25, posterior width 0.33. Base of the lateral eye tubercle separated. Clypeus yellowish brown, furnished with long spiniform setae, height longer than the diameter of PLE. Chelicerae orange; both promargin and retromargin lacking teeth. Labium longer than wider. Sternum yellowish brown, posterior margin narrow and extending between coxae IV.

Abdomen long and narrow, white with numerous gray spots, furnished with some long spiniform setae, and bases of the setae with brown speckles; posterior part of dorsum a little wider, tending narrower and lower and forming ramp-shape; two sides of dorsum almost straight; the surface of sides and posterior part with



Figs. 1-5. *Tmarus songi*, new species. 1. Female body, dorsal view; 2. Epigyne, ventral view; 3. Same, dorsal view; 4. Left male palp, ventral view; 5. Same, retrolateral view. Scale bars: 1. 1.0 mm; 2-5. 0.1 mm.

many crinkles; venter yellow. Leg formula: 2143. Measurements of legs: I 7.52 (2.33+2.65+1.69+0.85), II 7.73 (2.33+2.70+1.80+0.90), III 3.56 (1.17+1.38+0.57+0.44), IV 3.65 (1.33+1.25+0.60+0.47).

Male palp (Figs. 4, 5): With ventral and retrolateral tibial apophyses: ventral apophysis thick, long and digitiform; retrolateral apophysis small and dentiform. Bulb simple, longer than wide. Embolus thick and pointed, originating on distal part of bulb.

Female (based on Ar-01-0033): Total length 5.04. Carapace 1.77 long, 1.67 wide; abdomen 2.86 long, 2.01 wide. Diameters of eyes: AME 0.08, ALE 0.15, PME 0.10, PLE 0.15. Distances between eyes: AME-AME 0.13, AME-ALE 0.15, PME-PME 0.20, PME-PLE 0.35, ALE-PLE 0.28. MOA 0.39 long, anterior width 0.29, posterior width 0.42. Eye tubercles of ALE and PLE separated. Leg formula: 2143. Measurements of legs: I 7.17 (2.21+2.89+1.15+0.92), II 7.68 (2.31+2.82+1.56+0.99), III 4.09 (1.33+1.63+0.60+0.53), IV 4.24 (1.53+1.48+0.68+0.55). The posterior end extends beyond spinnerets. Other characteristics same as those in male.

Female genitalia (Figs. 2, 3): Without distinct margin; copulatory ducts widely originated and nearly spherical; spermatheca small and oval.

Diagnosis: The new species is similar to *Tmarus digitiformis* Yang, Zhu and Song 2005 (Yang et al., 2005: 96, Figs. 1-5), but differs from the latter by: (1) VTA of the male palp erect and long, RTA nail-shape (Figs. 4, 5); (2) the beginning of the female copulatory duct almost round (Fig. 3).

Material Examined: Holotype-male, Tongmian Town, Ningming County, Guangxi Province, China (22°6'N, 107°0'E), 8 May 2006, Mingsheng Zhu leg. (MHBU-Ar-01-0032). Paratypes-1 female, same data as for the holotype (MHBU-Ar-01-0033); 1 female and 1 male, Daqing Mountain, Pingxiang County, Guangxi province, China (22°6'N, 106°42'E), 14 May 2006, Mingsheng Zhu leg. (MHBU-Ar-01-0034); 2 females, Limu Mountain, Qiongzong County, Hainan Province, China (19°0'N, 109°48'E), 20 August 2007, Feng Zhang and Guangxin Han leg. (MHBU-Ar-01-0035).

Variation: Body length: males 3.06-3.51, females 4.05-5.04.

Distribution: China: Guangxi, Hainan.

Etymology: The specific name is a patronym in honor of the late Professor Da-Xiang Song.

Tmarus taiwanus Ono, 1977

Figs. 6–11

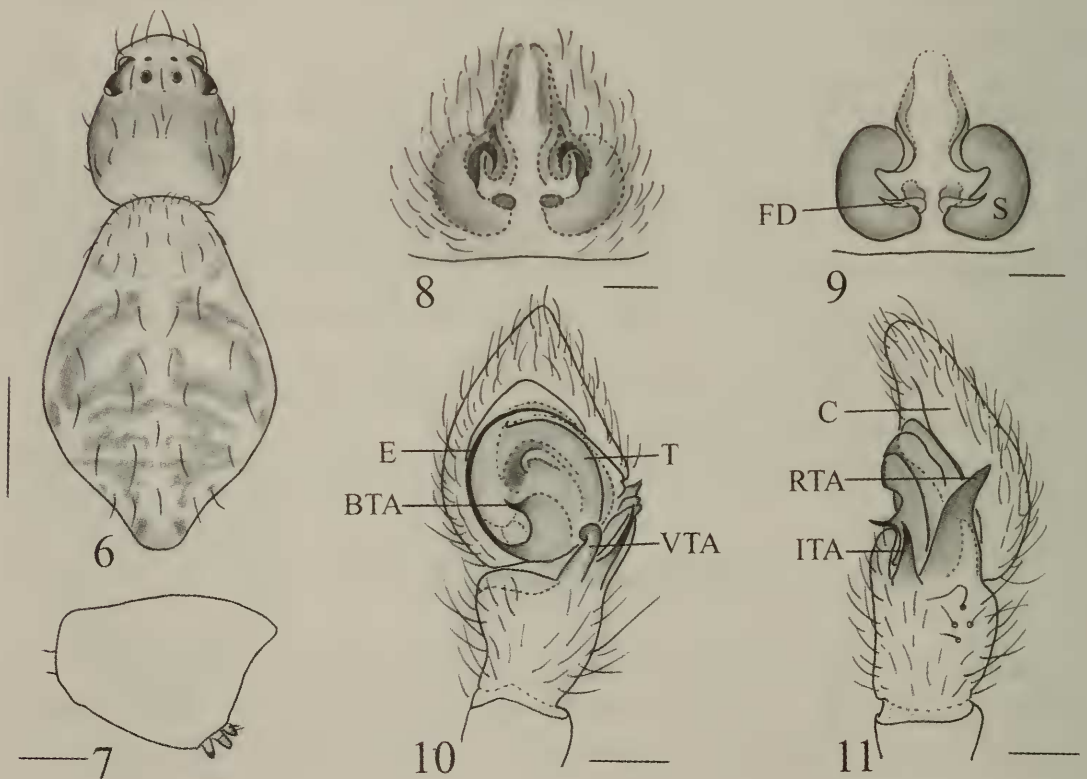
Male (base on Ar-01-0036): Total length 5.40. Carapace 2.24 long, 2.14 wide; abdomen 2.28 long, 1.67 wide. Carapace brown, length equal to width. Both eye rows recurved, and diameters of eyes: AME 0.10, ALE 0.20, PME 0.13, PLE 0.20. Distances between eyes: AME-AME 0.28, AME-ALE 0.15, PME-PME 0.35, PME-PLE 0.30, ALE-PLE 0.25. MOA 0.48 long, anterior width 0.45, posterior width 0.58. Base of the lateral eye tubercle separated. Clypeus yellowish brown, the anterior margin furnished with six long spiniform setae, height longer than the

diameter of PLE. Chelicerae orange; inner side with some small setae, both pro-marginal and retromarginal lacking teeth. Labium longer than wide. Sternum yellowish brown, posterior margin narrow and extending between coxae IV.

Abdomen long and narrow, gray with three transverse yellowish brown bands, scattered with a few brown speckles; posterior part of dorsum a little wider, tending narrower and lower and forming ramp-shape; two sides of dorsum almost straight; the surface of sides and posterior part with many crinkles; venter is yellow. Legs I-II reddish brown, III-IV yellowish brown. Leg formula: 2143. Measurements of legs: I 13.04 (3.82+4.77+3.18+1.27), II 13.24 (3.92+4.77+3.28+1.27), III 5.51 (1.70+2.01+1.06+0.74), IV 5.72 (1.80+2.01+1.06+0.85).

Male palp (Figs. 10, 11): With ventral, intermediate and retrolateral tibial apophyses: ventral apophysis thick, long and digitiform; intermediate apophysis thin and pointed; retrolateral apophysis large and horn-shape. Bulb simple, longer than wide. Embolus thin and pointed, originating on the bottom of bulb, basal tegular apophysis is short and pointed.

Female (based on Ar-01-0036): Total length 4.59. Carapace 1.90 long, 2.28 wide; abdomen 3.09 long, 1.84 wide. Diameters of eyes: AME 0.10, ALE 0.18, PME 0.13, PLE 0.18. Distances between eyes: AME-AME 0.23, AME-ALE



Figs. 6–11. *Tmarus taiwanus* Ono, 1977. 6. Female body, dorsal view; 7. Female dorsum, prolateral view; 8. Epigyne, ventral view; 9. Epigyne, dorsal view; 10. Left male palp, ventral view; 11. Left male palp, retrolateral view. Scale bars: 6–7. 1.0 mm; 8–11. 0.1 mm.

0.18, PME-PME 0.33, PME-PLE 0.40, ALE-PLE 0.28. MOA 0.43 long, anterior width 0.40, posterior width 0.53. Eye tubercles of ALE and PLE separated. Legs yellowish brown. Leg formula: 2143. Measurements of legs: I 8.90 (2.65+3.39+2.01+0.85), II 9.12 (2.76+3.50+1.91+0.95), III 4.66 (1.43+1.80+0.78+0.65), IV 4.69 (1.63+1.70+0.75+0.61). The posterior end occasionally extends beyond spinnerets. Other characteristics as in male.

Female genitalia (Figs. 8, 9): Lacks distinct copulatory ducts, spermatheca almost reniform.

Diagnosis: All the characters of *Tmarus taiwanus* accord with that of the genus *Tmarus*, but this species can be distinguished from all other *Tmarus* species by: (1) male palpal tegulum with an intermediate tegular apophysis and a basal tegular apophysis (Figs. 10, 11); (2) the median ocular area is longer than wide.

Material Examined: 1 male and 1 female, Wuming County, Guangxi Province, China (23°6'N, 108°10'E), 19 May 2002, Mingsheng Zhu leg (MHBU-Ar-01-0036). 1 female, Yingjiang County, Yunnan Province, China (24°25'N, 97°34'E), 17 May 2004, Zhisheng Zhang leg. (MHBU-Ar-01-0037). 1 female, Taizhong City, Taiwan (24°48'N, 120°24'E), 10 July 2000, Hengcheng Wu leg (MHBU-Ar-01-0038).

Variation: Body length: male 5.40 mm, females 4.59-8.73.

Distribution: China: Taiwan, Guangxi, Yunnan.

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